

**AMENDMENT TO THE SPECIFICATION: REPLACEMENT ABSTRACT**

Kindly add the following Abstract to the specification at new page 43:

An optical spectrum analyser (10), receiving a multi-channel optical signal (12). The optical signal (12) is passed through an optical isolator (14) and a fibre coupler (16) to a tunable optical filter. The tunable optical filter comprises one or more fibre Bragg gratings (18) inscribed in a length of optical fibre. The optical fibre is mounted on a means operable to apply a variable strain to the fibre, to thereby tune the peak wavelength of the Bragg grating (18) over a desired wavelength range, the tunable optical filter thereby reflecting each channel of the input signal (12) in turn. The detector (20) therefore detects a signal only if the input signal (12) contains wavelengths corresponding to the reflection wavelength of a grating (18).

## AMENDMENT TO THE SPECIFICATION

At pages 24-25, kindly amend the last paragraph of page 24 (continuing to the third line of page 25) as follows:

The calibration apparatus 110 comprises: an optical fibre coupler 112; a first photodetector 114 connected to one leg 112a on a first side of the calibration coupler 112; an in-fibre grating, in the form of a sampled grating 116, whose reflectivity varies as a function of wavelength across the optical band width of the grating 116, as shown schematically at 118, connected to the other leg 112b on the first side of the coupler 112; a second photodetector 120 connected to one leg 112c on the other side of the coupler 112; and means (not shown) operable to compare the outputs of the photodetectors 114, ~~[[128]]~~ 120. The second leg 112d of the other side of the calibration coupler 112 is connected to leg 16a of the first coupler 16. The sampled grating 116 reflects a-comb of narrow peaks and is athermalised, hence the wavelengths of the peaks do not vary with temperature. The wavelengths of at least some of the peaks correspond to ITU grid wavelengths.

## AMENDMENT TO THE SPECIFICATION (Cont'd)

At page 25, kindly amend the first full paragraph as follows:

An input optical signal 12 comprising, for example, 16 channels is routed to the grating 18 in the [[tuneable]] tunable optical filter. As the peak wavelength of the grating [[15]] 18 is tuned across the spectral bandwidth of the input signal 12, the various channels will be reflected by the grating 18, in turn, and transmitted through the first coupler 16 to the calibration coupler 112. The reflected signals are transmitted through legs 112a and 112b of the coupler to the first photodetector 114 and the sampled grating 116. The reflected signals are further reflected by the sampled grating 116, and transmitted to the second photodetector 120, via legs 112b and 112c of the coupler 112. The intensity of each signal following the further reflection is dependent upon its wavelength. Each reflected signal is detected in turn by each photodetector 114,120, as described. The output signal from each photodetector 114,120, which comprises a series of peaks, is recorded in time, over the period taken to tune the peak wavelength of the grating 18 over the desired spectral range. The signal pattern recorded from the second photodetector 120 is essentially a convolution of the input signal 12 and the reflection spectrum of the sampled grating 116. Knowing the spectral profile of the sampled grating 116, and the position of the peaks within the spectral profile, enables identification of when the reflected signal was of a particular wavelength.

## **AMENDMENTS TO THE DRAWINGS**

Attached, for the Examiner's review and approval, are red-lined proposed replacements for FIGs. 5 and 16. Upon approval by the Examiner, formal drawings will be submitted to the draftsperson.